List of Contents

NUMBER 1–3

SYMMETRY 2

Unifying Human Understanding (Part 1)

	ix	Papers to appear in Part 2
I. Hargittai	xi	Preface
M. Senechal	1	Symmetry revisited
J. Rosen	13	Symmetry at the foundations of science
A. A. Chernikov, R. Z. Sagdeev, D. A. Usikov and **G. M. Zaslavsky**	17	Symmetry and chaos
A. L. Loeb	33	The magic of the pentangle: dynamic symmetry from Merlin to Penrose
R. Brown	49	Symmetry, groupoids and higher-dimensional analogues
H. S. M. Coxeter	59	Trisecting an orthoscheme
P. Hilton and **J. Pedersen**	73	Duality and the Descartes deficiency
P. Hilton and **J. Pedersen**	89	Extending the binomial coefficients to preserve symmetry and pattern
S. Marcus	103	Symmetry in the simplest case: the real line
J. Pach	117	Delicate symmetry
C. A. Pickover	125	Halley maps for a trigonometric and rational function
A. Hill and **D. G. Larman**	133	A class of symmetric polytopes
L. Telegdi	137	Arrangements of minimal variance—multidimensional scaling in the symmetrical case
D. Chavey	147	Tilings by regular polygons—II. A catalog of tilings
G. M. Fleurent	167	Symmetry and polyhedral stellation—Ia
G. M. Fleurent	177	Symmetry and polyhedral stellation—Ib
P. W. Messer and **M. J. Wenninger**	195	Symmetry and polyhedral stellation—II
H. F. Verheyen	203	The complete set of Jitterbug transformers and the analysis of their motion
G. Fejes Tóth and **L. Fejes Tóth**	251	A geometrical analogue of the phase transformation of crystals

G. M. Chechin	255	Computers and group-theoretical methods for studying structural phase transitions
A. V. Malikov	279	Structural theory of space–time and intrapoint symmetry
A. T. Fomenko	301	Visual and hidden symmetry in geometry
C. A. Pickover	321	Mathematics and beauty—VIII. Tesselation automata derived from a single defect
L. Pauling	337	Interpretation of so-called icosahedral and decagonal quasicrystals of alloys showing apparent icosahedral symmetry elements as twins of an 820-atom cubic crystal
J. L. Finney	341	Local pseudosymmetry in simple liquids
S. J. Cyvin, J. Brunvoll and **B. N. Cyvin**	355	Topological aspects of benzenoids and coronoids, including "snowflakes" and "laceflowers"
E. R. Kouyoumdjian	375	A set theoretic approach to the symmetry analysis of hexadecahedrane
A. T. Balaban	397	Carbon and its nets
H. W. Kroto	417	C_{60}^{B} buckminsterfullerene, other fullerenes and the icospiral shell
M. Ács	425	Asymmetry through the eyes of a(nother) chemist
S. Lengyel	443	Chemical kinetics and thermodynamics. A history of their relationship
K. Gavroglu	457	Symmetries and the notion of elementarity in high energy physics
J. Parisi, J. Peinke, B. Röhricht, K. M. Mayer and **U. Rau**	467	Symmetry-breaking pattern formation in semiconductor physics: spatio-temporal current structures during avalanche breakdown
	I	Softstrip® data strip containing the table of contents of this issue

NUMBER 4–6

SYMMETRY 2

Unifying Human Understanding (Part 2)

P. Locher and **C. Nodine**	475	The perceptual value of symmetry
A. H. Lowrey	485	Mind's eye
S. V. Petukhov	505	Non-Euclidean geometries and algorithms of living bodies
R. Dixon	535	Spiral phyllotaxis
G. Mazzola, H.-G. Wieser, V. Brunner and **D. Muzzulini**	539	A symmetry-oriented mathematical model of classical counterpoint and related neurophysiological investigations by depth EEG

J. F. Liebman, J. M. Richter, M. J. Bienlein and **S. S. Kulkarni**	595	Square spirals, dimensionality and biopolymers
A. P. Stakhov	613	The golden section in the measurement theory
T. Tarnai	639	Buckling patterns of shells and spherical honeycomb structures
B. P. Fabricand	653	Symmetry in free markets
M. Apagyi	671	Symmetries in music teaching
L. Bencze	697	Uncertainty principle and symmetry in metaphors
A. Hill	709	Modern symmetry
Sz. Bérczi	715	Symmetry and technology in ornamental art of Old Hungarians and Avar-Onogurians from the archaeological finds of the Carpathian Basin, seventh to tenth century A.D.
P. J. Campbell	731	The geometry of decoration on prehistoric Pueblo pottery from Starkweather Ruin
W. K. Chorbachi	751	In the Tower of Babel: beyond symmetry in Islamic design
P. Gerdes	791	Reconstruction and extension of lost symmetries: examples from the Tamil of South India
A. Haake	815	The role of symmetry in Javanese batik patterns
J. G. Harries	827	Symmetry in the movements of T'ai Chi Chuan
M. Rozsondai and **B. Rozsondai**	837	Symmetry aspects of bookbindings
L. de Freitas	887	515—A symmetric number in Dante
S. Kerr	899	Symmetry in Christian time and space
M. Di Cerbo	907	Urban symmetry
A. Senior	913	Symmetry and wayward nature
Y.-M. Ha	921	Symmetry in pictures by young Chinese children
F. Lantos	931	From geometrical rigor to visual experience
E. Makovicky	955	Ornamental brickwork. Theoretical and applied symmetrology and classification of patterns
H. J. McWhinnie	1001	Influences of the ideas of Jay Hambidge on art and design
L.-X. Yu	1009	Symmetry in Chinese arts and crafts
O. Zouni	1027	Space⇌color⇌symmetry

J. Zvina 1041 *Ad infinitum*

I. Hargittai 1067 The joy of symmetry

I Softstrip® data strip containing the table of contents of this issue

NUMBER 7

iii Softstrip® data strip containing the table of contents of this issue

M. Orlowski and **M. Pachter** 1073 An algorithm for the determination of a longest increasing subsequence in a sequence

A. Jazcilevich and **R. P. Tewarson** 1077 A stability criterion for explicit boundary value Runge–Kutta methods

F. D. van Niekerk and **A. van Niekerk** 1085 A Galerkin method using rational basis functions

S. Yakowitz 1095 A statistical foundation for machine learning, with application to Go-Moku

T. C. E. Cheng and **S. Li** 1103 Some observations and extensions of the optimal TWK-power due-date determination and sequencing problem

M. S. Petković and **L. D. Petković** 1109 A computational test for the existence of polynomial zero

A. Rosen and **A. Isser** 1115 Recent studies on the lifting surface theory

P. N. Tandon and **R. Agarwal** 1131 A study on nutritional transport in a synovial joint

R.-J. Li and **E. S. Lee** 1143 Analysis of fuzzy queues

I. J. D. Craig and **A. D. Sneyd** 1149 The acceleration of matrix power methods by cyclic variations of the shift parameter

1161 Book Reports

1163 Software Report

I *Software Survey Section*

NUMBER 8/9

SYSTEM-THEORETIC METHODS IN ECONOMIC MODELLING I

S. Mittnik vii Preface

M. Aoki 1165 A two-step state space time series modeling method

A. M. Havenner and **K. R. Criddle** 1177 System theoretic time series: an application to inventories and prices of California range cattle

S. Mittnik 1189 Multivariate time series analysis with state space models

A. R. Bergstrom 1203 Optimal forecasting of discrete stock and flow data generated by a higher order continuous time system

R. Kalaba and **L. Tesfatsion** 1215 Time-varying linear regression via flexible least squares

H.-F. Chen and **L. Guo** 1247 Nonstationary time series identification

W. D. O'Neill 1259 The coding theorem and ordinary least-squares models in economics

H. Theil and **C.-F. Chung** 1265 The information tableau of a linear allocation model

C. A. Los 1269 The prejudices of least squares, principal components and common factors schemes

C. A. Los 1285 Identification of a linear system from inexact data: a three-variable example

B. Rustem 1305 A superlinearly convergent constrained min–max algorithm for rival models of the same system

E. Sheshinski and **M. D. Intriligator** 1317 Cost-benefit analysis with switching regimes: an application of the theory of planning

E. Tse and **A. Khilnani** 1329 An integrated system model for a fishery management process—I. Model structure

R. Amir 1345 A lattice-theoretic approach to a class of dynamic games

I Softstrip® data strip containing the table of contents of this issue

NUMBER 10

iii Softstrip® data strip containing the table of contents of this issue

S. Galanis, A. Hadjidimos and **D. Noutsos** 1351 The relationship between the Jacobi and the successive overrelaxation (SOR) matrices of a k-cyclic matrix

P. Achuthan and **S. Sundar** 1359 A recursive algorithm for matrix Padé approximants—the divide-and-conquer approach

J. A. Snyman 1369 A convergent dynamic method for large minimization problems

A. H. Khater, M. F. El-Sabbagh and **D. K. Callebaut** 1379 Analytical solutions for nonlinear magnetohydrodynamic atmospheres

D. A. Murio 1385 The mollification method and the numerical solution of the inverse heat conduction problem by finite differences

R. P. Agarwal and **P. J. Y. Wong** 1397 Lidstone polynomials and boundary value problems

S.-G. Chen and **P. Y. Hsieh** 1423 Fast computation of the *N*th root

1429 Book Reports

I *Software Survey Section*

NUMBER 11

iii Softstrip® data strip containing the table of contents of this issue

E. G. Yanik 1431 Sufficient conditions for a discrete maximum principle for high order collocation methods

S. K. Kumar, W. I. Thacker and **L. T. Watson** 1435 Rotating magnetohydrodynamic flow about a stationary disk in a circular magnetic field

D. A. Murio and **D. Hinestroza** 1441 Numerical identification of forcing terms by discrete mollification

H. M. Cekirge, A. H. Al-Rabeh and **N. Gunay** 1449 Determining the wind-driven surface currents for prediction of movements of oil slicks in the Arabian Gulf

A. Isser and **A. Rosen** 1455 Applying the lifting surface method to the blade tip of a hovering helicopter

S. Li 1467 A tutorial on the extended perturbation analysis

V. Pan 1475 Fast and efficient parallel evaluation of the zeros of a polynomial having only real zeros

V. Pan and **J. Reif** 1481 Fast and efficient parallel solution of dense linear systems

J. C. Misra and **S. Roy** 1493 Stresses in the neighbourhood of an exterior crack in a bone specimen

A. A. Zenkin 1503 Waring's problem: $g(1, 4) = 21$ for fourth powers of positive integers

1507 Software Reports

I *Software Survey Section*

NUMBER 12

	iii	Softstrip® data strip containing the table of contents of this issue
K. A. Wen and **J. F. Wang**	1511	Efficient computing methods for parallel processing: an implementation of the Viterbi algorithm
C.-J. Lin	1523	A parallel algorithm for generating combinations
M. A. Venkataramanan, J. Mote and **D. L. Olson**	1535	An interactive MOLP procedure using epsilon-constraints
J. Angeles, O. Ma and **A. Rojas**	1545	An algorithm for the inverse dynamics of *n*-axis general manipulators using Kane's equations
A. Q. M. Khaliq	1563	A predictor-corrector scheme for fourth order parabolic partial differential equations
C. Puglisi	1567	Parallel algorithms and architectures for matrix multiplication
T.-W. Hwang, T.-H. Kuo and **C.-A. Wang**	1573	Similarity solutions for surface-tension driven flows in a slot with an insulated bottom
	1587	Book Reports
	1589	Software Reports
	I	*Software Survey Section*